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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,474	11/21/2001	Yuji Judai	MTS-2700US1	3161

7590 01/10/2003
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EXAMINER

WEISS, HOWARD

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 01/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/990,474

Applicant(s)

JUDAI, YUJI

Examiner

Howard Weiss

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5, 8, 9, 11, 12, 14, 16 and 17 ~~is/are~~ are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5, 8, 9, 11, 12, 14, 16 and 17 ~~is/are~~ are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 21 November 2001 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/177,038.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2
- ☐ Interview Summary (PTO-413) Paper No(s) _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

Art Unit: 2814

Attorney's Docket Number: MTS-2700US1

Filing Date: 10/22/98

Continuing Data: Division of 09/177,038 (10/22/98, now abandoned)

Claimed Foreign Priority Date: 10/24/97 (JPX)

Applicant(s): Judai

Examiner: Howard Weiss

Specification

1. The disclosure is objected to because of the following informalities: ---A Method of Forming A--- should be inserted before "Semiconductor" in the title.
Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 8, 11, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Arita et al. (U.S. Patent No. 5,624,864).

Arita et al. show all aspects of the instant invention (e.g. Figure 20) including:

- providing a circuit board **31** and forming a first insulating film **37** at least indirectly on said circuit board
- forming a ferroelectric capacitor **41** by forming a lower electrode **38**, a ferroelectric film **39** and an upper electrode **40** on said first insulating film
- forming a second insulating film **46** and forming a plurality of contact openings **43b**, **43c** to said upper and lower electrodes
- forming a metal wiring pattern in said openings including a base layer **54b**, **54c** of TiN and an upper layer **44b**, **44c** of Al

- forming a surface protective film **55** of SiN over said second insulating film and metal wiring pattern

4. Claims 5, 8, 9, 11, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Patel et al. (U.S. Patent No. 5,374,578).

Patel et al. show all aspects of the instant invention (e.g. Figures 1 to 11) including:

- providing a circuit board **1** and forming a first insulating film **10** at least indirectly on said circuit board
- forming a ferroelectric capacitor by forming a lower electrode **12**, a ferroelectric film **14** and an upper electrode **16** on said first insulating film
- forming a second insulating film **18** using TEOS-CVD method utilizing TEOS activated by O₃ (Column 5 Lines 19 to 32)
- forming a plurality of contact openings **20**, **22** to said upper and lower electrodes
- forming a metal wiring pattern **26** in said openings including a base layer of TiN and an upper layer of Al (Column 5 Lines 47 to 58)
- heat treating the TiN layer in the temperature range between 200 to 650° C (Column 5 Lines 64 to 68).
- forming a surface protective film **28** over said second insulating film and metal wiring pattern

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arita et al. and Wolf et al. (1986).

Arita et al. show most aspects of the instant invention (Paragraph 3) except for depositing the Al layer using sputtering and heating the circuit board in a temperature range of 100 to 400° C. Wolf et al. teach to heat circuit boards during sputtering of Al to improve film properties (third paragraph from top of page 367). It would have been obvious to a person of ordinary skill in the art at the time of invention to heat circuit boards during sputtering of Al to improve film properties. Arita et al. and Wolf et al. disclose the claimed invention except for a temperature range of 100 to 400° C. It would have been obvious to one having ordinary skill in the art at the time the invention was made to heat the circuit board to a temperature range of 100 to 400° C, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arita et al. and Wolf et al. (1986).

Arita et al. show most aspects of the instant invention (Paragraph 3) except for depositing the SiN layer using PECVD at RF power 300 W or less. Wolf et al. teach to deposit the SiN layer using PECVD so as to use low temperatures (Middle paragraph of page 192). It would have been obvious to a person of ordinary skill in the art at the time of invention to deposit the SiN layer using PECVD so as to use low temperatures. Arita et al. and Wolf et al. disclose the claimed invention except for using RF power 300 W or less. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use RF power of 300 W or less, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al. and Wolf et al. (1986).

Patel et al. show most aspects of the instant invention (Paragraph 4) except for depositing the Al layer using sputtering and heating the circuit board in a temperature range of 100 to 400° C. Wolf et al. teach to heat circuit boards during sputtering of Al to improve film properties (third paragraph from top of page 367). It would have been obvious to a person of ordinary skill in the art at the time of invention to heat circuit boards during sputtering of Al to improve film properties. Patel et al. and Wolf et al. disclose the claimed invention except for a temperature range of 100 to 400° C. It would have been obvious to one having ordinary skill in the art at the time the invention was made to heat the circuit board to a temperature range of 100 to 400° C, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Drawings

9. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 11/21/01 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

Conclusion

10. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. Papers should be faxed to Art Unit 2814 via the Art Unit 2814 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(703) 308-7722** or **-7724**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications. The official TC2800 Before-Final, **(703) 872-9318**, and After-Final,

(703) 872-9319, Fax numbers will provide the fax sender with an auto-reply fax verifying receipt of their fax by the USPTO.

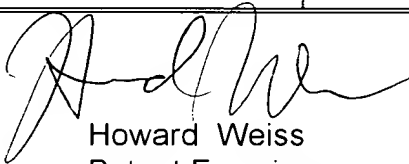
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(703) 308-4840** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via **Howard.Weiss@uspto.gov**.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 Receptionist at **(703) 308-0956**.

12. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 438/ 3, 240	12/6/02
Other Documentation: PLUS Analysis Report	12/5/02
Electronic Database(s): EAST	12/6/02

HW/hw
9 December 2002


Howard Weiss
Patent Examiner
Art Unit 2814